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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,644	11/20/2001	Hajime Hasebe	H-1019	8907

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EXAMINER

CHAMBLISS, ALONZO

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/988,644

Applicant(s)

HASEBE ET AL.

Examiner

Alonzo Chambliss

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above claim(s) 13, 14, 26-39 and 54-57 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-12 and 40-53 is/are allowed.
- 6) ☒ Claim(s) 15-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

1. The pre-amendment A filed on 11/20/01 has been fully considered and made of record in Paper No. 2.

Election/Restrictions

2. Applicant's election of species A1 claims 1-12, 15-25, and 40-53 in Paper No. 10/23/02 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

3. Claims 13, 14, 26-39, and 54-57 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species claims, there being no allowable generic or linking claim.

Priority

4. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

5. The information disclosure statement (IDS) submitted on 11/20/01 in Paper No. 3 was filed before the mailing date of the non-final rejection on 11/16/02. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

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Drawings

6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 10, 11, and 34. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

7. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of **50 to 150 words**. It is important that the abstract not exceed **150 words** in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

8. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The following title is suggested: " SEMICONDUCTOR UTILIZING GROOVES IN LEAD AND TAB PORTIONS OF LEAD FRAME TO PREVENT PEEL OFF BETWEEN THE LEAD FRAME AND THE RESIN ".

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Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 15-25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

11. Claim 15 recites the limitation " a semiconductor element " in line 22. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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13. Claims 15-23, and 25, insofar as definite, are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (6,388,311) in view of Minamio et al. (6,208,820).

With respect to Claim 15, Nakashima discloses a semiconductor element 5 with a tab 4 with the semiconductor element 5 fixed to a surface thereof. A plurality of leads 3 formed in a mutually independent manner so that inner ends thereof are positioned close to peripheral edges of the tab 4. The wires G, W are for electrically connecting electrodes on the semiconductor element 5 and the inner ends of the leads with each other. The wires G, W are for electrically connecting the electrodes on the semiconductor element 5 and the tab 4 with each other (see Figs. 1b and 3a-3c). A seal member 2 is formed of an insulating resin, wherein the seal member 2 is formed to cover the semiconductor element 5, the tab 4, the wires G, W and the inner end sides of the leads 3. (see col. 4 lines 1-5; Figs. 1b and 3a-3c). The tab 4 is formed larger than the semiconductor element 5 so that outer peripheral edges thereof are positioned outside outer peripheral edges of the semiconductor element 5, wherein a groove is formed in the surface of the tab 4 so as to be positioned between a semiconductor element fixing area to which the semiconductor element 5 is fixed and wire connection areas to which the wires G, W are connected (see Figs. 3a-3c). Nakashima fails to disclose a plating film that is formed selectively on wire connecting surfaces areas of the tab and the leads and the wires are connected onto the plating film. However, Yagi discloses a plating film 3A, 4A that is formed selectively on wire connecting surfaces areas of the tab 2 and the leads 4 and the wires 8 are connected onto the plating film

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3A, 4A. Therefore, it would have been obvious to incorporate the plating film with the device of Nakashima, since the plating film to improve the electrically connection between the semiconductor element and the tab/leads as taught by Yagi.

With respect to Claim 16, Nakashima discloses wherein the groove 4A surrounds a whole circumference of the semiconductor element fixing area (see Fig. 1b).

With respect to Claim 17, Nakashima discloses wherein the adhesive is not present outside the groove 4A (see col. 2 lines 48-52; Figs. 3a-3c).

With respect to Claim 18, Nakashima discloses wherein an area of the tab 4 surface to which the semiconductor element 5 is fixed is larger than that of a backside of the tab 4 (see Figs. 3a-3c).

With respect to Claim 19, Yagi discloses wherein the tab 2 has a section, which is in the shape of an inverted trapezoid (see Fig. 2).

With respect to Claim 20, Yagi discloses wherein semiconductor element fixing area is smaller than the semiconductor element 16 (see Fig. 5).

With respect to Claim 21, Nakashima discloses wherein the groove 4A is selectively formed correspondingly to areas to which the wires G are connected (see Figs. 3a-3c).

With respect to Claims 22 and 23, Nakashima discloses wherein the tab 4 is quadrangular and the groove 4A is selectively formed in a mutually independent manner with/without being formed at four corners of the tab 5 (see Figs. 3a-3c).

With respect to Claim 25, Nakashima discloses wherein the groove 4A is formed by pressing work (see col. 3 lines 20-23).

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14. Claim 24, insofar as definite, is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (6,388,311) and Minamio et al. (6,208,820) as applied to claim 15 above, and further in view of Minamio et al. (U.S. 6,208,020).

Nakashima-Minamio both fail to disclose grooves are formed in the leads respectively and the wires are connected to front end sides of the leads located outside the grooves. However, Minamio discloses grooves are formed in the leads 1 respectively and the wires 5 are connected to front end sides of the leads 1 located outside the grooves (see Figs. 1a and 8). Therefore, it would have been obvious to incorporate grooves in the leads with the device Nakashima-Minamio, since the grooves in the leads would prevent the resin encapsulant from peeling of the leads as taught by Minamio.

Allowable Subject Matter

15. Claims 1-12 and 40-53 are allowed.

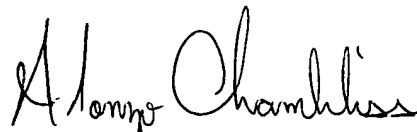
16. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not teach or suggest the combination of a tab with a semiconductor element fixing area and wire connection areas, **wherein the tab has a back side exposed to a mounting surface of a seal member. Tab suspension leads exposed to the mounting surface of the seal member and contiguous to the tab.** A semiconductor element positioned with the seal member and fixed through an adhesive onto the semiconductor fixing area of the tab. The semiconductor element is

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electrically connecting to the tab and a plurality of leads by separate wires. **A groove (i.e. slit) is formed in the tab and positioned between the semiconductor element fixing area and the wire connection areas** in claims 1 and 40.

The prior art made of record and not relied upon is cited primarily to show the product of the instant invention.

AC/November 18, 2002



Alonzo Chambliss
Patent Examiner
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